

Remarks

Reconsideration of this application as amended is respectfully requested.

Claims 43-44 stand rejected under 35 U.S.C. §112, first paragraph.

Claims 34-36, 38, 40-41, and 43-44 stand rejected as being unpatentable over U.S. Patent No. 5,748,524 of *Chen et al.* ("Chen") and a publication entitled *Introduction to the Theory of Ferromagnetism*, Clarendon Press: Oxford, 1996, p. 16 by *Aharoni* ("Aharoni").

Claims 34, 37, and 39 stand rejected under 35 U.S.C. §102(e) as being unpatentable over U.S. Patent No. 5,956,267 of *Hurst et al.* ("Hurst").

Claims 34, 37, and 39 stand rejected under 35 U.S.C. §103(a) as being unpatentable over *Hurst* and *Chen*.

Claim 42 stands rejected under 35 U.S.C. §103(a) as being unpatentable over *Chen* and U.S. Patent No. 5,587,943 of *Torok et al.* ("Torok").

The Examiner has rejected claims 43-44 under 35 U.S.C. §112, first paragraph, and has stated that the keeper structure cannot be a hard ferromagnetic material according to applicant's own specification. In response, applicant has cancelled claims 43-44.

The Examiner in rejecting claims 34-36, 38, 40-41, and 43-44 has stated that

Claims 34-36, 38, 40, 41, 43, and 44 are rejected under 35 U.S.C. 102(b) as being anticipated by US 5,748,524 (*Chen et al.*) considered with the text *Introduction to the Theory of Ferromagnetism* by *Aharoni*, Clarendon Press: Oxford, 1996, p.16. [original emphasis omitted] (Page 3, paragraph numbered 5, Office Action mailed 11/21/02) (emphasis added).

Applicant will first treat this statement as a rejection of claims 34-36, 38, 40, 41, 43, and 44 as being anticipated by *Chen*. Applicant will then treat this statement as a rejection of claims 34-36, 38, 40, 41, 43, and 44 as being obvious in view of *Chen* and *Aharoni*.

Applicant respectfully submits that claim 34 is not anticipated by *Chen*. Claim 34 is a magnetic memory having a sense layer and a keeper structure that provides a flux closure path between a pair of edge regions of the sense layer. *Chen* does not teach or suggest a keeper structure which provides a flux closure path between the edge regions of a sense layer as claimed in new claim 34. Instead, *Chen* discloses a memory cell 20 having a separated pinning material 30 disposed on each edge of a memory cell 20 (see Figs 5 and 6 of *Chen*). It is submitted that the disconnected pinning material 30 does not provide a flux closure path as claimed in claim 34. Applicant therefore submits that claim 34, and therefore claims 35-42 which depend from claim 34, are not anticipated by *Chen*.

Applicant further submits that claim 34 is not obvious in view of *Chen* and *Aharoni* because *Chen* and *Aharoni* do not disclose or suggest a keeper structure that provides a flux closure path between a pair of edge regions of a sense layer as claimed in claim 34. Instead, *Chen* discloses a memory cell 20 having a separated pinning material 30 and *Aharoni* provides a discussion of exchange interactions in ferromagnetic material. Applicant therefore submits that claim 34, and therefore claims 35-42 which depend from claim 34, are not obvious in view of *Chen* and *Aharoni*.

The Examiner has rejected claims 34, 37, and 39 under 35 U.S.C. §102(e) as being unpatentable over *Hurst*. Applicant respectfully submits, however, that claim 34 is not anticipated by *Hurst* because *Hurst* does not disclose a keeper structure for applying magnetic fields using exchange coupling to a pair of edge regions of a sense layer as claimed in claim 34. Instead, *Hurst* discloses a structure 30 that is separated from a bit region 70 by a dielectric layer 60. (See Figs 7-8 and col. 6, lines 23-25 of *Hurst*). Applicant therefore submits that claim 34, and therefore claims 37 and 39 which depend from claim 34, are not anticipated by *Hurst*.

The Examiner on pages 5-6 of the Office Action mailed 11-21-02 expends considerable effort in speculating on the orientation of the easy axis in the structure taught by *Hurst*.

Applicant submits that claims 34, 37, and 39 do not recite any limitations regarding easy axis orientations in a keeper structure.

The Examiner has rejected claims 34, 37, and 39 under 35 U.S.C. §103(a) as being unpatentable over *Hurst* and *Chen*. Applicant submits that claims 34, 37, and 39 are not obvious in view of *Hurst* and *Chen* because *Hurst* and *Chen* do not disclose or suggest a keeper structure having a proximity to a sense layer which provides a flux closure path between the edge regions of the sense layer as claimed in claim 34. Instead, *Hurst* discloses a structure 30 that is separated from a bit region 70 by a dielectric layer 60 (See Figs 7-8 of *Hurst*) and *Chen* discloses a memory cell 20 having a separated pinning material 30 disposed on each edge of a memory cell 20 (see Figs 5 and 6 of *Chen*).

It is also submitted that *Hurst* does not teach or suggest a combination with *Chen* and that *Chen* does not teach or suggest a combination with *Hurst*. It would be impermissible hindsight based on an applicant's own disclosure to combine the pinning material of *Chen* with the structure of *Hurst*. Moreover, any such combination would still lack a flux closure path between the edge regions of the sense layer as claimed in claims 34, 37, and 39.

The Examiner has stated that

If it is thought that the structure in *Hurst* does not inherently provide the magnetization or easy axis of the stabilizing (keeper) structure to be substantially perpendicular to the easy axis of the sense layer, then this may be a difference.

(Page 7, first paragraph, Office Action mailed 11-21-02) (emphasis original). Applicant submits that claims 34, 37, and 39 do not contain a limitation that the easy axis of the keeper structure is substantially perpendicular to the easy axis of the sense layer as stated by the Examiner.

The Examiner has rejected claim 42 under 35 U.S.C. §103(a) as being unpatentable over Chen and Torok. Applicant has shown that claim 34 from which claim 42 depends is not anticipated by Chen because Chen does not disclose a keeper structure having a proximity to a sense layer which provides a flux closure path between the edge regions of the sense layer as claimed in claim 34. It is also submitted that Torok does not teach or suggest a keeper structure having a proximity to a sense layer which provides a flux closure path between the edge regions of the sense layer as claimed in claim 34.

It is respectfully submitted that in view of the amendments and arguments set forth above, the applicable objections and rejections have been overcome.

The Commissioner is authorized to charge any underpayment or credit any overpayment to Deposit Account No. 08-2025 for any matter in connection with this response, including any fee for extension of time, which may be required.

Respectfully submitted,

Date: 3-21-03

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Version with Markings to Show Changes Made

39. The magnetic memory of claim 34, wherein the keeper structure encases a conductor that provides read and write access to the magnetic memory cell.